Gender differences in adolescents' academic motivation and classroom behaviour

Myfanwy Bugler, Sarah P McGeown*, Helen St-Clair Thompson

[1]Psychology Department, University of Hull, Hull, UK

[2]School of Education, University of Edinburgh, Edinburgh, UK

[3]School of Psychology, University of Newcastle, Newcastle, UK

*Requests for reprints should be addressed to Dr Sarah McGeown, Moray House School of Education, St John's Land, Holyrood Road, University of Edinburgh, Edinburgh, UK (e-mail: s.mcgeown@ed.ac.uk).

Abstract

The present study investigated gender differences in adolescents' academic motivation and classroom behaviour and gender differences in the extent to which motivation was associated with, and predicted, classroom behaviour. Seven hundred and fifty students (384 boys and 366 girls) aged 11-16 (*M*age = 14.0, 1.59 *SD*) completed a questionnaire examining academic motivation and teachers completed assessments of their classroom behaviour. Girls generally reported higher levels of academic motivation, whilst teacher reports of behaviour were poorer for boys. Interestingly, boys' reported levels of academic motivation were significantly more closely associated with teacher reports of their classroom behaviour. Furthermore, cognitive aspects of boys' motivation were better predictors of their classroom behaviour than behavioural aspects. On the other hand, behavioural aspects of girls' motivation were better predictors of their behaviour. Implications for understanding the relationship between motivation and behaviour among adolescent boys and girls are discussed, in addition to interventions aimed at improving adolescents' classroom behaviour.

Key words: gender, sex, motivation, behaviour, adolescence

Introduction

Educational researchers and practitioners have long been interested in constructs which underpin children's learning and attainment, for example academic motivation. Motivation can be defined as a student's energy and drive to learn, work effectively and achieve their potential (Martin, 2008). Motivation is therefore known to play an important role in students' academic achievement (e.g. Gottfried, 1985; Henderlong-Corpus, McClintic-Gilbert & Hayenga, 2009; Lepper, Henderlong-Corpus & Iyengar, 2005; Martin, 2001; Pintrich & DeGroot, 1990).

A number of theories have been proposed to explain the nature of academic motivation. However, in an effort to provide an integrative approach to academic motivation and engagement, Martin (2001; 2007a) proposed a multidimensional theory. The approach recognises that motivation encompasses both cognitive and behavioural aspects (e.g. Miller, Greene, Montalvo, Ravindran & Nicholls, 1996; Pintrich & DeGroot, 1990), and both adaptive (i.e., positive or effective) and maladaptive (i.e., negative or impeding) aspects (Martin, Marsh & Debus, 2003). According to this approach, motivation comprises adaptive cognitive dimensions, adaptive behavioural dimensions, maladaptive cognitive dimensions, and maladaptive behavioural dimensions. This approach draws upon a number of key theoretical perspectives which have been influential in motivational research, including self-efficacy theory (Bandura, 1997), expectancy value theory (Eccles, 1983; Wigfield, 1994), goal theory (Ryan & Deci, 2000), and self-regulation theory (Zimmerman, 2002). This approach to motivation has now been employed for a wide program of research to study a diverse range of factors relevant within education (e.g., Green, Martin & Marsh, 2007; Liem & Martin, 2011; Martin, 2007b; 2012; Plenty & Heubeck, 2013). This is partly because the model lends itself particularly well to educational intervention; it allows educators to identify

problems with specific facets of motivation, so students can be made aware of areas that need addressing in order to achieve their academic potential (Martin, 2008).

To assess academic motivation from this theoretical perspective, a measure of academic motivation has been developed: The Student Motivation and Engagement Scale (SMES, Martin 2001; 2007a). This assesses student's adaptive cognitions (self-belief, valuing school work and learning focus), adaptive behaviours (planning, task management and persistence), maladaptive cognitions (anxiety, failure avoidance and uncertain control) and maladaptive behaviours (self-sabotage and disengagement). Research has shown that the scale is a reliable and valid measure of academic motivation. For example, Martin (2003; 2007b) confirmed the strong factor structure and good internal reliability of the SMES. Using the scale, motivation is also associated with achievement in English, Mathematics and Science (Green et al., 2007). The scale is also sensitive to age and gender related differences in motivation (Liem & Martin, 2011).

For example, Martin (2007b) examined gender differences in scores on the SMES in over 12,000 students and found that girls scored significantly higher than boys in many adaptive aspects of motivation (e.g., valuing of school, mastery orientation (learning focus), planning, task management and persistence), but also scored higher in a maladaptive aspect of motivation: anxiety (see also Martin & Marsh, 2005; Pintrich & DeGroot, 1990). In contrast, boys scored significantly higher than girls in self-handicapping (self-sabotage) and disengagement (both maladaptive aspects of academic motivation). In fact, more positive levels of academic motivation among girls are common. For example, Skinner, Furrer, Marchand and Kindermann (2008) found that girls reported significantly higher levels of emotional and behavioural engagement, whilst boys reported higher levels of behavioural dissatisfaction. Furthermore, gender differences in motivation have been found within various academic subjects, such as English, mathematics, foreign languages, and sport (Eccles,

Wigfield, Harold & Blumenfeld, 1993; Jacobs, Lanza, Osgood, Eccles & Wigfield, 2002; Williams, Burden & Lanvers, 2002). With the exception of sport, girls typically report higher levels of motivation.

It is possible that gender differences in motivation contribute to other differences that have been observed between boys and girls within an educational context. For example, it is widely recognised within education that there are gender differences in academic attainment. More boys perform below their potential than girls, as defined in value-added terms (achievement above that which is expected) (Gibb, Ferguson & Horwood, 2008; Younger & Warrington, 2000). In England, teachers' assessments at Key Stage 3 illustrate that girls are ahead of boys primarily in English but also in Maths and Science, and that a higher proportion of girls attain GCSE's of A* to C compared to boys (Department for Education, 2010). In addition to gender differences in academic attainment, differences in classroom behaviour are also commonly reported. Studies in both primary and secondary schools have shown that boys are consistently more disruptive and exhibit more behavioural difficulties than girls (Arbuckle & Little, 2004; Beaman, Wheldall & Kemp, 2007; Gibb et al., 2008; Kaplan, Gheen & Midgley, 2002; McDermott, Mordell & Stolttzfus, 2001; Wheldall & Merrett, 1988). For example, in a large scale study carried out in 251 UK secondary schools, Houghton, Wheldall and Merrett (1988) revealed that more boys than girls were identified as troublesome pupils across several academic subjects and across different year groups.

However, compared to research examining the relationship between pupils' motivation and attainment (Green et al., 2007; Gottfried, 1985; Lepper et al., 2005; Martin, 2001; Pintrich & DeGroot, 1990) there has been less research examining the relationship between pupils' motivation and classroom behaviour. Given that different approaches to studying motivation often encompass behavioural dimensions (e.g., adaptive and maladaptive behaviours such as persistence and self-sabotage; Martin, 2007a), and that motivation is often

theoretically linked to behaviour (Dornyei, 2000; Martin, 2012; Skinner, Furrer, Marchand & Kindermann, 2008), student reports of their academic motivation and teacher reports of their classroom behaviour are likely to be closely related. In fact, Skinner and Belmont (1993) illustrated evidence of a relationship between student reports of their emotional engagement and teacher's perceptions of their behaviour. More recently, Skinner et al., (2008) studied both emotional (e.g., enthusiasm, interest, enjoyment) and behavioural (attention, effort, persistence) indicators of classroom engagement and found that emotional components of engagement contributed to significant changes in behavioural components over the course of a year; however the reverse relationship was not as consistent. The authors had postulated that emotional indicators would precede their behavioural counterparts, arguing that emotions fuel behaviours. Furthermore, they had proposed that different emotions would create different behaviours. For example, whilst frustration may have led to overt signs of disruptive behaviour, anxiety may have led students to avoid learning situations. Therefore it is important to consider the influence of specific aspects of motivation and how they may manifest within different behaviours.

Across a range of domains, associations between adolescents' motivation and behaviours have been found. For example, Anderman, Griesinger and Westerfield (1998) found that motivation was associated with behaviours related to cheating, whilst Vallerand, Fortier and Guay (1997) reported a link between academic motivation and likelihood of high school dropout. In addition, in a study investigating mastery and performance goals in sixth-grade middle school students, Kaplan and Maehr (1999) found that motivational orientations were related to disruptive classroom behaviour. They found that students' reports of being disruptive in the classroom were negatively related to a mastery goal orientation, whilst a performance goal orientation was positively related to disruptive classroom behaviour. These results were replicated by Kaplan et al. (2002) in their study of classroom goal structure and

student disruptive behaviour in ninth-grade students (14 year olds). In fact, Hall, Howe, Merkel and Lederman (1986, p.109) have argued that "student classroom behaviour is the most valid indicator of student motivation". Pintrich (2003, p.104) described motivation as "what gets people going, keeps them going, and helps them finish tasks", regarding motivation to have consequences on an individual's choice of activities, level of activity and persistence and performance in the activity. Martin (2012) echoed this in a more recent study, suggesting that motivation relates to behavioural intention and enactment.

It is also worthy of note that although research has revealed gender differences in motivation (Eccles et al., 1993; Martin, 2007b) and in classroom behaviour (Houghton et al., 1988), there may also be gender differences in the strength of the relationship between these constructs. If this were the case, it would suggest that either boys' or girls' academic motivation would exert a stronger influence on their classroom behaviour. This would not only have implications for our understanding of the factors predicting classroom behaviour in boys and girls, but may also be of use for interventions aimed at improving classroom behaviour. Indeed, Logan and Medford (2011) found that boys' academic motivation was more closely related to their attainment compared to girls. They suggested two alternative explanations. Firstly that boys, to a greater extent than girls, need to be successful academically in order to be motivated. Alternatively, boys' motivation may have played a more significant role in the effort that they put into academic work. In addition, Logan and Johnston (2009) and Oakhill and Petrides (2007) similarly found that boys' attitudes and interest in reading were more closely associated with their reading attainment. Prior to this, Ainley Hillman and Hidi (2002) had reported that girls were more likely than boys to persist with a text that was of lower topic interest, and likewise Williams, Burden and Lanvers (2002) found that both boys and girls stated that girls were more inclined to work hard, even in cases where the work was tedious, whereas boys, to a greater extent than girls, needed to

find the work enjoyable to work hard. These research studies have been guided by an interest in identifying differences between boys and girls in terms of how their motivation and attitudes are related to their attainment and perseverance. The literature suggests that girls' motivation appears to have less influence on these factors; although it is not clear why. It is proposed that if boys' motivation is more closely associated with their attainment and perseverance, it may also be more closely associated with their classroom behaviour. However, to date, gender differences have not yet been examined in this context; but if these differences exist they could have important implications for educational practice.

The current study had three aims: 1) To add to existing literature examining gender differences in adolescent's academic motivation and classroom behaviour, 2) To explore gender differences in the relationship between academic motivation and classroom behaviour, and 3) To examine whether different aspects of academic motivation would predict different classroom behaviours in boys and girls. It was predicted that girls would report more positive academic motivation, but also higher levels of anxiety. Teacher reports of negative classroom behaviour were predicted to be higher in boys than girls. It was also predicted that boys' academic motivation would be more closely correlated with teacher reports of their classroom behaviour. However, it was predicted that the aspects of motivation predicting classroom behaviour would be the same in boys and girls.

Method

Participants

In total, 750 students (366 girls and 384 boys) from the UK took part in this study. Students were from five secondary schools, in Years 7 – 11 (age range 11 – 16, mean age 13.99, 1.59 *SD*). All students were English speaking and any students with literacy

difficulties were supported by teaching assistants to help read the questionnaires to ensure that ability did not influence completion of the questionnaire.

Materials and procedure

All participants completed the Student Motivation and Engagement Scale - High School (SMES-HS, Martin, 2007a). This instrument measures secondary school students' academic motivation using dimensions of adaptive cognition (self-belief, valuing school work, and learning focus), adaptive behaviour (planning, task management and persistence), maladaptive cognition (anxiety, failure avoidance and uncertain control) and maladaptive behaviour (self-sabotage and disengagement). With regard to adaptive cognitions, self-belief refers to student's confidence in their ability to do well in their school work. Valuing of school work refers to the extent to which students believe that what they learn is useful, important and relevant. Learning focus refers to the extent to which students are focused on learning, problem solving and developing their skills. With regard to adaptive behaviours, planning refers to the extent to which students plan their school work; task management refers to the way students organise their study time, whilst persistence refers to how much students will persist with challenging materials. With regard to maladaptive cognitions, anxiety refers to feelings of nervousness or worrying relating to academic work, failure avoidance refers to the extent to which students are motivated by avoiding failure and uncertain control refers to student's feelings of uncertainty about how to perform well academically. Finally, maladaptive behaviours refer to self-sabotage, the extent to which students self-handicap themselves by not trying, and disengagement, the extent to which students feel they want to give up with academic work. There are a total of 44 items in the questionnaire: four items measure each dimension. For each item the students agree/disagree with a series of statements on a seven point Likert-type scale (ranging from "I disagree strongly" to "I agree strongly"). A score is calculated for each of the 11 motivation and

engagement constructs by totalling the responses on the appropriate items. The questionnaires were completed during the school day and students were assessed in their form rooms with a subject teacher present. Students were encouraged to answer all questions, use the full range of the Likert scale and to answer the questions honestly. Cronbach's alpha values for the four dimensions of academic motivation were as follows: adaptive cognition (3 dimensions α = .84), adaptive behaviour (3 dimensions, α = .81), maladaptive cognition (3 dimensions α = .69) and maladaptive behaviour (2 dimensions α = .71).

Form teachers were asked to complete the Conners' Teachers Rating Scale Revised (CTRS – R; Conners, 1997) Short Version. Form teachers are classroom teachers who teach a single subject within the school curriculum based on their area of expertise (e.g., Maths, Geography). However, their additional role as form teacher provides them with an overview of their designated student(s) behaviour and academic performance across all aspects of the school curriculum, as they are the key person within the school who is responsible for the pastoral wellbeing of their designated student(s). Therefore, form teachers completed the CRTS-R for their designated students. The CRTS-R comprises of 28 items assessing four dimensions of behaviour in the classroom: Oppositional behaviour, cognitive problems/inattention, hyperactivity and ADHD Index. Oppositional behaviour refers to breaking rules, not respecting authority and being easily annoyed. Cognitive problems/inattention refers to difficulties with concentration, completing tasks and organisational skills. Hyperactivity refers to difficulty sitting still, staying on task, being restless or impulsive and finally, ADHD Index identifies behaviours associated with children 'at risk' for ADHD. For each item, teachers are asked to rate the extent to which the behaviour has been displayed by the child over the previous weeks. Teachers are required to respond to each statement using the 4 point Likert scale. The total score for each dimension is computed for each child, which is then converted to a standardized score. The standardized

scores for the CTRS - R were used to analyse gender differences in the strength of association between motivation and classroom behaviour. However, the CTRS - R has different standardisation norms for boys and girls and therefore teachers' actual ratings (raw scores) were used to examine gender differences in behaviour (ANOVA). Cronbach's alpha for the four dimensions of the CTRS-R was $\alpha = .88$.

Results

Initially, analysis was carried out to examine gender differences in academic motivation and classroom behaviour. Table 1 shows the means (and standard deviations in parenthesis) of boys and girls on each motivation and behaviour construct. Analysis of variance was used to investigate gender differences.

---- Table 1 about here ----

After applying Benjamini and Hochberg's (1995) False Discovery Rate to control for multiple comparisons, there were still significant gender differences in the following areas, with girls reporting higher levels of academic motivation: Valuing, $F(1, 748) = 5.13$, $p = .03$, $\eta_p^2 = .007$, learning focus, $F(1,748) = 5.55$, $p = .02$, $\eta_p^2 = .007$, task management, $F(1,748) = 6.11$, $p = .02$, $\eta_p^2 = .008$, persistence, $F(1,748) = 4.50$, $p = .04$, $\eta_p^2 = .006$, anxiety, $F(1,748) = 27.33$, $p < .001$, $\eta_p^2 = .036$ and uncertain control, $F(1,748) = 6.70$, $p = .009$, $\eta_p^2 = .009$. No other gender differences were significant. These results were consistent with predictions, although girls also reported higher levels of uncertain control (a maladaptive cognitive dimension of academic motivation). Following conventional approaches for η_p^2 in analysis of variance, a small effect size is .02, a medium effect size is > .06 and a large effect size is > .10. Therefore it is important to note that many of these differences were very small (the

largest difference was for anxiety). Significant gender differences in behaviour were also found, with boys receiving higher teacher ratings for cognitive problems/inattention, $F(1,748) = 5.22$, $p = .03$, $\eta_p^2 = .007$, hyperactivity, $F(1,748) = 22.81$, $p < 0.001$, $\eta_p^2 = .032$, and ADHD, $F(1,748) = 21.67$, $p < 0.001$, $\eta_p^2 = .028$, consistent with predictions. Again, it is important to note that many of these differences would be regarded as relatively small. These analyses were carried out for each school year and very few significant differences were found. Therefore these results provide an accurate representation of gender differences in academic motivation and classroom behaviour across all secondary school years.

Table 2 shows the associations between students self-reports of academic motivation and teacher reports of negative classroom behaviour.

---- Table 2 about here ----

In general, students' reports of adaptive cognitions and adaptive behaviours were inversely associated with teacher reports of negative classroom behaviours. Maladaptive cognitions were weakly but generally positively associated with negative classroom behaviours, whilst maladaptive behaviours were significantly and positively associated with negative classroom behaviours. However, it should be noted that several of these correlations were weak ($r = .10$ indicates a small effect size and $r = .30$ indicates a medium effect size) Cohen (1988). Analyses had been carried out to identify whether the associations between academic motivation and classroom behaviour in boys and girls were significantly different. Boys and girls differed significantly in the strength of association between adaptive cognitions and most classroom behaviours (oppositional z = 2.39, $p = .08$, hyperactivity, z = 2.63, $p = .004$ and ADHD z = 2.35, $p = .009$) and adaptive behaviours and classroom behaviour, (oppositional z = 2.31, $p = .01$, hyperactivity, z = 1.98, $p = .02$ and ADHD z = 1.70, $p = .04$). In all cases, these associations were stronger for boys than for girls, consistent

with predictions. However, there were no gender differences in the strength of association between student reports of maladaptive cognitions and teacher reports of classroom behaviour or between students' reports of maladaptive behaviours and teacher reports of classroom behaviour.

Finally, stepwise regression analysis was carried out to examine which dimensions of motivation best predicted classroom behaviour, with separate analyses for boys and girls.

---- Table 3 about here ----

For boys, learning focus (adaptive cognition), self-sabotage (maladaptive behaviour) and uncertain control (maladaptive cognition) were consistently the only significant predictors of negative classroom behaviours. For all four classroom behaviours, learning focus was the strongest predictor, followed by self-sabotage and finally uncertain control. For girls, disengagement (maladaptive behaviour) was the most consistent predictor of negative classroom behaviours, followed by self-sabotage (maladaptive behaviour), persistence (adaptive behaviour), self-belief (adaptive cognition) and task management (adaptive behaviour). Therefore, in general, boys' classroom behaviours were predicted by more cognitive aspects of motivation (either adaptive or maladaptive), whereas girls' classroom behaviours were predicted almost exclusively by behavioural aspects of motivation (in particular maladaptive behaviour). This was not consistent with the hypotheses as no gender differences were predicted in these analyses.

Discussion

The present study examined gender differences in adolescents' academic motivation and classroom behaviour, gender differences in the strength of the relationship between these

factors and gender differences in the aspects of academic motivation that best predicted classroom behaviours. Girls reported higher levels of academic motivation, in particular in the positive dimensions of valuing, learning focus, task management and persistence. These differences were small, but nevertheless the results suggest that girls, compared to boys, believe that learning is important (value), are more focused on learning (learning focus), organise their study time to be most effective (task management) and are more likely to persist with difficult material (persistence). The results are therefore consistent with previous research demonstrating small differences between boys' and girls' academic motivation in favour of girls (Martin, 2007b; Martin & Marsh, 2005). However, girls also reported higher levels of uncertain control (were uncertain about how to perform well) and anxiety (felt nervous or worried about their academic work). A higher level of anxiety among girls is consistent with previous research (Martin, 2007b; Martin & Marsh, 2005; Pintrich & DeGroot, 1990). Therefore, it is not only the case that gender differences are found in positive aspects of motivation, girls also have a tendency towards more of the negative maladaptive aspects of motivation which may hinder their learning. Pintrich and DeGroot (1990) demonstrated that anxiety (specifically test anxiety) was negatively related to academic performance and student's beliefs in their ability to perform well. Furthermore Elliot and Church (1997) found that fear of failure was negatively associated with achievement motivation. In fact, anxiety is regarded as a maladaptive cognition, which may be as problematic to attainment as externally directed behaviours (e.g., negative classroom behaviours). With regard to negative classroom behaviours, the results revealed significant gender differences in teacher reports of behaviour, with boys' engaging more in these negative behaviours. Differences were particularly wide in hyperactivity and ADHD type behaviours, with narrower gender differences in cognitive problems/inattention and no gender differences in oppositional behaviour. Whilst the widest differences were found in

hyperactivity and ADHD type behaviours, these significant differences were still relatively small. The results do, however, support previous studies which have also found behaviour problems to be more prevalent in boys than in girls (Gibb et al., 2008; Houghton et al., 1988). In addition, boys consistently outnumber girls in diagnoses of behavioural disorders (Hulme & Snowling, 2009).

Interestingly, a significant relationship was consistently found between student reports of their academic motivation and teacher reports of their behaviour; although notably several of these correlations were weak. Significant inverse relationships were found between adaptive cognition, adaptive behaviour and negative classroom behaviour. In addition, maladaptive cognition and maladaptive behaviour were positively associated with negative classroom behaviours; these associations were stronger for maladaptive behaviour. It is intuitive that adaptive cognitions and behaviours (i.e., positive and effective aspects of motivation) would be inversely related to negative classroom behaviour, as students reporting these positive dimensions of motivation would be expected to demonstrate less negative behaviour within the classroom. On the other hand, students reporting maladaptive cognitions and behaviours (i.e., negative and counterproductive aspects of motivation) would be likely to demonstrate more negative classroom behaviours. These findings support previous suggestions that motivation is an important psychological concept within education (Henderlong-Corpus et al., 2009), and further demonstrate that motivation is not only associated with academic attainment (e.g., Lepper et al. 2005), but also relates to classroom behaviour, which may have implications for educational practice. As many researchers have recognised the negative effects of disruptive behaviour in the school classroom (e.g. Arbuckle & Little, 2004; Kaplan et al., 2002), the current study suggests that one potential method of reducing such behaviour may be to optimise students' motivation. This will be returned to later.

It is important to note that although some of the correlations found were relatively weak, these measures were completed by different people; class teachers and their students. Therefore it is interesting that students' self-reports of their academic motivation are significantly associated with teacher reports of their classroom behaviour. That significant associations were found is pertinent and gives weight to the hypothesis that adolescents' internal feelings of academic motivation and engagement are associated with how teacher's perceive them to behave in the classroom.

The results also revealed quite consistent gender differences in the relationship between academic motivation and classroom behaviour; these associations were stronger among boys. These results suggest that low levels of academic motivation in boys may be more likely to lead to overt displays of negative classroom behaviour; unmotivated girls however may be better able to regulate their classroom behaviours. These results are consistent with research demonstrating closer links between boys' motivation and attainment (Logan & Medford, 2011), attitudes and attainment (Logan & Johnston, 2009) and interest and attainment (Oakhill & Petrides, 2007). In the current study, this closer relationship between boys' levels of academic motivation and classroom behaviour suggests that poor motivation in boys could be particularly problematic. Due to the correlational nature of the data, it is not possible to determine causality; however the results do support the suggestion that boys' motivation and behaviour are more closely linked. In addition, researchers generally agree that motivation precedes behaviour (Hall et al., 1986; Skinner et al., 2008), suggesting that poor academic motivation in boys in particular may have a greater influence on their engagement in disruptive behaviours. Unlike adaptive cognitions and behaviours (positive dimensions of motivation) there were no significant gender differences in the extent to which maladaptive dimensions of motivation were associated with negative behaviour.

Given the closer relationship between boys' reported motivation and classroom behaviour, one potential method towards addressing behavioural problems in the classroom, particularly for boys, may be to find ways to increase their academic motivation. Intervention studies aimed at improving behaviour suggest that negative behaviours are quite resistant to change (Hinshaw, 1992) and in the classroom, teachers feel that they have to spend too much time dealing with behavioural issues (Little, 2005). Approaches aimed at improving classroom behaviour typically take the form of school based interventions (Stage & Quiroz, 1997; Hawken & Horner, 2003). The strategies and resources used in these interventions vary considerably, from use of report cards (Fairchild, 1983), games and reward systems (Tankersley, 1995) to social skills training (McConaughy, Kay & Fitzgerald, 1999), or tip sheets for teachers (Little, Hudson & Wilks, 2002). As a possible route towards improving adolescents' behaviour, interventions aimed at raising academic motivation would provide a very positive approach towards improving behavioural difficulties; however whether it is likely to be an effective approach is unknown. There is some research demonstrating that interventions focusing on increasing adolescents' motivation lead to gains in motivation and engagement (Martin, 2008), however it is not known whether these gains would transfer into improvements in behaviour. This suggestion is similar to that of Kaplan et al. (2002) who suggested that changing student's goals in a classroom (i.e., towards a focus on learning and understanding rather than outperforming others) may lead to a reduction in disruptive behaviour.

In addition, for both boys and girls, adaptive cognitions (i.e., self-belief, valuing and learning focus) were generally (though not always statistically) more closely associated with teacher reports of classroom behaviour than adaptive behaviours (i.e., planning, task management and persistence). This is quite surprising, as it would be predicted that student's behavioural dimensions of motivation would map more closely onto external displays of

behaviour than cognitive dimensions of motivation. However, Skinner et al., (2008) similarly reported that emotional aspects of engagement predicted behaviour aspects of engagement, suggesting that such a relationship is not unusual. Furthermore, Skinner and Belmont (1993) found that children's reports of their emotional engagement were more closely associated with teacher's reports of their behaviours than teacher's reports of their emotions. Therefore, the results of this study do emphasise the importance of considering cognitive/affective aspects of motivation when implementing interventions aimed at improving classroom behaviour. It may be important that teachers attempt to develop a better understanding of their students cognitive/affective states of motivation; that they do not solely rely on behaviour manifestations to gauge their student's level of motivation; this may be particularly true of boys.

Regression analyses were carried out to examine the dimensions of motivation best predicting adolescent's classroom behaviour. These analyses were also split by gender and it was found that for boys, learning focus, self sabotage and uncertain control were the only significant predictors of all aspects of classroom behaviour (all dimensions of academic motivation had been entered into the regression model; those retained were those that remained statistically significant predictors). It is noteworthy that two of these dimensions (learning focus and uncertain control) represent cognitive aspects of motivation; as stated earlier, it may be predicted that behavioural aspects of motivation would relate more closely to classroom behaviours, however for boys, this did not appear to be the case. For them, learning focus (an adaptive cognition) was consistently the strongest predictor of classroom behaviours. For girls however, their maladaptive behaviours predicted most variance in teacher reports of their classroom behaviour. In fact, all aspects of motivation that predicted variance in classroom behaviour were behavioural aspects of motivation (with the exception of self-belief which predicted some, albeit the least, variance in cognitive

problems/inattention). In terms of implications for education, these results suggest that, for boys in particular, teachers should consider cognitive/affective aspects of motivation and how this may influence boys' classroom behaviours. Educational interventions aimed specifically at targeting weak aspects of academic motivation have been shown to be effective (e.g., Martin, 2008), although more research is necessary to understand the long term efficacy of these approaches and particularly whether targeting motivation incurs any benefits on classroom behaviour.

The results of the current study lead to many suggestions for future research. Firstly, examining gender differences in the relationship between motivation and behaviour across different academic domains would be of interest. Gottfried (1985) argues that student's academic motivation is differentiated into school subject areas, with students having higher motivation for some subjects than others (see also Eccles et al., 1993; Green et al., 2007; Jacobs et al., 2002). Similarly, differences have been found in behaviour; boys are more likely to be identified as troublesome pupils in subjects such as Modern Languages and English compared to other subjects such as Maths, Art and Physical Education (Houghton et al., 1988). Indeed, Green et al. (2007) argued that there could be some benefits to studying motivation from a domain specific approach. Therefore whilst the current study examined general levels of academic motivation and behaviour, a domain specific approach would be of interest to examine the association between motivation and behaviour in different classroom environments.

Assessments of student's academic attainment would also provide further insight into whether there are gender differences in the strength of the relationship between adolescent's motivation and attainment or behaviour and attainment. There is currently very little research in this area. That which has been carried out, has been within a primary school environment (e.g., Logan & Johnston, 2009; Logan & Medford, 2011; Oakhill & Petrides, 2007). A better

understanding of whether there are robust gender differences in the association between behaviour, motivation and academic achievement in both primary and secondary school settings is necessary.

Finally, as suggested by Skinner et al., (2008) it may be the case that specific aspects of academic motivation present themselves differently in different classroom behaviours. More research is necessary to develop a better understanding of the relationship between specific aspects of academic motivation and specific behaviours within the classroom environment.

There are a number of limitations that should be borne in mind when considering the results of this study. Firstly, the study adopted a cross-sectional and correlational design to investigate the relationship between academic motivation and classroom behaviour; therefore questions regarding causality cannot be answered. A longitudinal study would be necessary to develop a better understanding of the relationship between different aspects of academic motivation and classroom behaviour over time. Alternatively, an intervention study would allow an opportunity to examine the extent to which changes in academic motivation may produce observable changes in classroom behaviour.

In addition, whilst the present study demonstrates that adolescent boys' academic motivation is more closely associated with their classroom behaviour, it cannot answer why this is the case. It may be that girls are, in general, more conscientious, compliant or self-disciplined, and therefore less likely to allow their motivation to influence negative classroom behaviours. In other words, even in classroom situations in which girls are unmotivated, their personalities make them less likely to actively display negative behaviours. Interestingly, gender differences in personality have been reported across several large scale studies (e.g., Costa Jr, Terracciano & McCrae, 2001; Del Giudice, Booth & Irwing, 2012; Klimstra Hale

III, Raaijmakers, Branje & Meeus, 2009; Klimstra, Crocetti, Hale III, Fermani & Meeus, 2011; Soto, John, Gosling & Potter, 2011; Vecchione, Alessandri, Barbaranelli & Caprara, 2012). For example, among a large sample of college students, Costa Jr et al., (2001) noted that females reported higher self-discipline and dutifulness. More recently, Vecchione et al., (2012) demonstrated that at age 16, girls scored higher on conscientiousness. Klimstra et al., (2009; 2011) and Soto et al., (2011) have also found that during adolescence, girls report higher levels of conscientiousness; however it should be noted that gender differences in conscientiousness are typically narrower than gender differences in other personality traits, such as neuroticism. In addition, whilst it is theoretically possible that personality traits mediate the relationship between academic motivation and classroom behaviour, further research would be required to investigate this. An important limitation of the present study is that it does not allow us to understand *why* adolescent boys' academic motivation is more closely associated with their classroom behaviour. Similarly, it does not allow us to understand why boys' report lower levels of academic motivation or why teachers report more behavioural problems among boys. Again, more research is necessary to explore these questions further.

Finally, it should be noted that several of the correlations, although statistically significant, were relatively weak. In addition, the regression analyses indicated that only 11% - 21% of the variance in classroom behaviour could be predicted by academic motivation. Therefore, the practical value in attempting to boost academic motivation as a route towards improving behaviour could be questioned; although the present study suggests that it may be more worthwhile for boys than girls.

In conclusion, within a large sample of secondary school aged pupils, the results were consistent with previous research suggesting that girls have higher academic motivation, but also higher levels of anxiety, whilst boys display more negative classroom behaviours.

Therefore the results confirm previous findings within the literature reporting gender differences in academic motivation and behaviour, but also add to the literature in an important way. Firstly, boys' academic motivation (adaptive cognitions and behaviours) were more closely associated with teacher reports of their classroom behaviour. In addition, boys' cognitive aspects of academic motivation predicted more variance in their classroom behaviours; conversely for girls, behavioural aspects of academic motivation better predicted classroom behaviour. The results of this study not only have implications for researchers studying motivation and classroom behaviour, but also have implications for interventions aimed at enhancing boys' (and to a lesser extent girls') classroom behaviour.

References

Ainley, M., Hillman, K., & Hidi, S. (2002). Gender and interest processes in response to literary texts: Situational and individual interest. *Learning and Instruction, 12*, 411–428.

Anderman, E. M., Griesinger, T., & Westerfield, G. (1998). Motivation and cheating during early adolescence. *Journal of Educational Psychology, 90,* 84-93.

Arbuckle, C., & Little, E. (2004). Teachers' perceptions and management of disruptive classroom behaviour during the middle years (years five to nine). *Australian Journal of Educational and Developmental Psychology, 4,* 59-70.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman and Co.

Beaman, R., Wheldall, K., & Kemp, C. (2007). Recent research on troublesome classroom behaviour: A review. *Australian Journal of Special Education 6,* 45-60.

Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: a practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society, Series B, 57,* 289-300.

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (second ed.). Lawrence Erlbaum Associates.

Conners, C. K. (1997). Conners' Rating Scales-Revised. *Multi Health Systems Inc. US.*

Costa Jr, P. T., Terracciano, A., & McCrae, R. R. (2001). Gender differences in personality traits across cultures: Robust and surprising findings. *Journal of Personality and Social Psychology, 81*, 322-331.

Department for Education. (2010). GCSE and equivalent attainment by pupil characteristics in England, 2009/10. Downloaded on the 22nd of July 2011 from: http://www.education.gov.uk/rsgateway/DB/SFR/s000977/sfr37-2010.pdf.

Del Giudice, M., Booth, T., & Irwing, P. (2012). The distance between Mars and Venus: Measuring global sex difference in personality. *PLoS ONE, 7*, e29265.

Dornyei, Z., (2000). Motivation in action: Towards a process-oriented conceptualisation of student motivation. *British Journal of Educational Psychology 70,* 519-538.

Eccles, J. (1983). Expectancies, values and academic behaviours. In J. Spence (Ed.). *Achievement and Achievement Motivation*. San Francisco: Freeman.

Eccles, J., Wigfield, A., Harold, R. D., & Blumenfeld, P. (1993). Age and gender differences in children's self- and task perceptions during elementary school. *Child Development 64*, 830 – 847

Elliot, A. J., & Church, M. A. (1997). A hierarchical model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology 72*, 218-232.

Fairchild, T. N. (1983). Things that work: Effects of a daily report card system on an eighth grader exhibiting behavioural and motivational problems. *The School Counsellor,* 83-86.

Gibb, S. J., Ferguson, D. M., & Horwood, L. J. (2008). Gender differences in educational achievement to age 25. *Australian Journal of Education, 52,* 63-80.

Gottfried, A. E. (1985). Academic intrinsic motivation in elementary and junior high school students. *Journal of Educational Psychology, 77,* 631–645.

Green, J., Martin, A. J., & Marsh, H. W. (2007). Motivation and engagement in English, mathematics and science high school subjects: Towards an understanding of multidimensional domain specificity. *Learning and Individual Differences, 17,* 269-279.

Hall, V. C., Howe, A., Merkel, S., & Lederman, N. (1986). Behaviour, motivation, and achievement in desegregated junior high school science classes. *Journal of Educational Psychology, 78,* 108-115.

Hawken, L. S., & Horner, R. H. (2003). Evaluation of a targeted Intervention within a school wide system of behaviour support. *Journal of Behavioural Education, 12,* 225–240.

Henderlong-Corpus, J., McClintic- Gilbert, M., & Hayenga, A. (2009). Within-year changes in children's intrinsic and extrinsic motivational orientations: Contextual predictors and academic outcomes. *Contemporary Educational Psychology 34,* 155-146.

Hinshaw, S. P. (1992). Externalizing behavior problems and academic underachievement in childhood and adolescence: Causal relationships and underlying mechanisms. *Psychological Bulletin 111,* 127-155.

Houghton, S., Wheldall, K., & Merrett, F. (1988). Classroom behaviour problems which secondary school teachers say they find most troublesome. *British Educational Research Journal 14,* 297–312.

Hulme, C., & Snowling, M. J. (2009). *Developmental disorders of language, learning and cognition.* Wiley Blackwell.

Jacobs, J. E., Lanza, S., Osgood, D. W., Eccles, J. S., & Wigfield, A. (2002). Changes in children's self-competence and values: Gender and domain differences across grades one through twelve. *Child Development 73, 509-527.*

Kaplan, A., Gheen, M., & Midgley, C., (2002). Classroom goal structure and student disruptive behaviour. *British Journal of Educational Psychology, 72,* 191-211.

Kaplan, A., & Maehr, M. L. (1999). Achievement goals and student well being. *Contemporary Educational Psychology, 24,* 330-358

Klimstra, T. A., Crocetti, E., Halle III, W. W., Fermani, A., Meeus, W. H. J. (2011). Big Five personality dimensions in Italian and Dutch adolescents: A cross-cultural comparison of mean-levels, sex differences, and associations with internalizing symptoms. *Journal of Research in Personality, 45*, 285-296.

Klimstra, T. A., Hale III, W. W., Raaijmakers, Q. A. W., Branje, S. J. T., & Meeus, W. H. J. (2009). Maturation of personality in adolescence. *Journal of Personality and Social Psychology, 96,* 898-912.

Lepper, M. R., Henderlong-Corpus, J. H., & Iyengar, S. S. (2005). Intrinsic and extrinsic motivational orientations in the classroom: age differences and academic correlates. *Journal of Educational Psychology, 97,* 184-196.

Liem, G. A. D., & Martin, A. J. (2011). Peer relationships and adolescents' academic and non-academic outcomes: Same-sex and opposite-sex peer effects and the mediating role of school engagement. *British Journal of Educational Psychology, 81,* 183-206.

Little, E., Hudson, A. & Wilks, R. (2002). The efficacy of written teacher advice (tip sheets) for managing classroom behaviour problems. *Educational Psychology, 22,* 251-266.

Little, E., (2005). Secondary school teachers' perceptions of students' problem behaviours. *Educational Psychology, 25*, 369-377.

Logan, S., & Johnston, R. S. (2009). Gender differences in reading ability and attitudes: examining where these differences lie. *Journal of Research in Reading, 32,* 199-214.

Logan, S., & Medford, E. (2011). Gender differences in strength of association between motivation, competency beliefs and reading skill. *Educational Research, 53,* 85-94.

Martin, A. J. (2001). The Student Motivation Scale: A tool for measuring and enhancing motivation. *Australian Journal of Guidance and Counselling, 11,* 1-20.

Martin, A. J. (2003). The Student Motivation Scale: Further testing of an instrument that measures school students' motivation. *Australian Journal of Education, 47*, 88-106.

Martin, A.J. (2007a). The Motivation and Engagement Scale (10th Edition). Sydney, *Australia: Lifelong Achievement Group.*

Martin, A. J. (2007b). Examining a multi-dimensional model of student motivation and engagement using a construct validation approach. *British Journal of Educational Psychology, 77,* 412-440.

Martin, A. J. (2008). Enhancing student motivation and engagement: The effects of a multi-dimensional intervention. *Contemporary Educational Psychology, 33,* 239-269.

Martin, A. J. (2012). Should students have a gap year? Motivation and performance factors relevant to time out after completing school. *Journal of Educational Psychology, 102,* 561-576.

Martin, A. J., & Marsh, H. W. (2005).Motivating boys and motivating girls: Does teacher gender really make a difference? *Australian Journal of Education, 49,* 320-334.

Martin, A. J., Marsh, H. W., & Debus, R. L. (2003). Self-handicapping and defensive pessimism: A model of self protection from a longitudinal perspective. *Contemporary Educational Psychology, 28,* 1-36.

McConaughy, S. H., Kay, P. J., & Fitzgerail, M., (1999). The Achieving Behaving Caring Project for Preventing ED: Two Year Outcomes. *Journal of Emotional and Behavioural Disorders, 7,* 224 – 239.

McDermott, P. A., Mordell, M., & Stolzfus, J. C. (2001). The organisation of student performance in American schools: Discipline, motivation, verbal learning, and non verbal learning. *Journal of Educational Psychology, 93,* 65-76.

Miller, R. B., Greene, B. A., Montalvo, G. P., Ravindran, B., & Nicholls, J. D. (1996). Engagement in academic work: The role of learning goals, future consequences, pleasing others, and perceived ability. *Contemporary Educational Psychology, 21,* 388-422.

Oakhill, J. V. & Petrides, A. (2007). Sex differences in the effects of interest in boys' and girls' reading comprehension. *British Journal of Psychology, 98,* 2, 223-235.

Pintrich, P. R. (2003). *Motivation and classroom learning,* in Reynolds, W.M., Miller, G.E. (Eds),*Handbook of Psychology*, Wiley, Hoboken, NJ, pp.103-22

Pintrich, P. R., & DeGroot, E. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology, 82,* 33-40.

Plenty, S., & Heubeck, B. G. (2013). A multidimensional analysis of changes in mathematics motivation and engagement during high school. *Educational Psychology, 33,* 14-30.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development and well-being. *American Psychologist, 55,* 68-78.

Skinner, E. A., & Belmont, M. J. (1993). Motivation in the classroom: Reciprocal effects of teacher behaviour and student engagement across the school year. *Journal of Educational Psychology, 85,* 571-581.

Skinner, E., Furrer, C., Marchand, G., & Kindermann, T. (2008). Engagement and disaffection in the classroom: Part of a larger motivational dynamic. *Journal of Educational Psychology, 100,* 765-781.

Soto, C. J., John, O. P., Gosling, S. D., & Potter, J. (2011). Age differences in personality traits from 10 to 65: Big Five domains and facets in a large cross-sectional sample. *Journal of Personality and Social Psychology, 100*, 330-348.

Stage, S. A., Quiroz, D. R., (1997). A meta analysis of interventions to decrease disruptive classroom behaviour in public education settings. *School Psychology Review, 26,* 333-368.

Tankersley, M. (1995). A group-oriented management program: A review of research on the good behaviour game and implications for teachers. *Preventing School Failure, 40,*19-24.

Vallerand, R. J., Fortier, M. S., & Guay, F. (1997). Self-determination and persistence in a real-life setting: Toward a motivational model of high school dropout. *Journal of Personality and Social Psychology, 72,* 1161-1176.

Vecchione, M., Alessandri, G., Barbaranelli, C., & Caprara, G. (2012). Gender differences in the Big Five personality development: A longitudinal investigation from late adolescence to emerging adulthood. *Personality and Individual Differences, 53,* 740-746.

Wheldall, K., & Merrett, F., (1988). Which classroom behaviours do primary school teachers say they find most troublesome? *Educational Review, 40, 13-27.*

Wigfield, A. (1994). Expectancy-value theory of achievement motivation: A developmental perspective. *Educational Psychology Review, 6,* 49-78.

Williams, M., Burden, R., & Lanvers, U. (2002). 'French is the language of love and stuff': Student perceptions of issues related to motivation in learning a foreign language. *British Educational Research Journal 28,* 503–528.

Younger, M., & Warrington, M. (2000). The other side of the gender gap. *Gender and Education, 12,* 493-508.

Zimmerman, B. J. (2002). Achieving self regulation: The trial and triumph of adolescence. In F. Pajares & T. Urdan (Ed.). *Academic Motivation of Adolescents*. Connecticut: Information Age Publishing.

Table 1: Gender differences in academic motivation and classroom behaviour.

	Boys (*n* = 384)		Girls (*n* = 366)	
	Mean	SD	Mean	SD
Adaptive cognition				
Self-belief	45.78	12.45	46.90	11.30
Valuing	48.23	11.74	50.07	10.35
Learning focus	43.34	12.40	45.42	11.78
Adaptive behaviour				
Planning	50.39	9.75	50.89	9.93
Task management	48.35	9.89	50.13	9.82
Persistence	47.86	11.12	49.54	10.62
Maladaptive cognition				
Anxiety	47.68	10.16	51.58	10.24
Failure avoidance	53.48	10.01	52.50	10.25
Uncertain control	51.31	9.16	53.09	9.69
Maladaptive behaviour				
Self sabotage	52.03	10.31	50.40	14.18
Disengagement	52.25	11.79	51.61	12.18
Classroom behaviour (raw scores)				
Oppositional	2.26	2.90	1.96	2.93
Cogproblems/inattention	4.08	3.94	3.42	4.00
Hyperactivity	3.54	4.26	2.20	2.92
ADHD	6.97	7.88	4.59	5.93

Table 2: Correlations between academic motivation and classroom behaviours (split by gender).

Behaviour	Adaptive cognition	Adaptive behaviour	Maladaptive cognition	Maladaptive behaviour
Boys				
Oppositional behaviour	-.37**	-.31**	.11*	.31**
Cognitive problems/inattention	-.34**	-.26**	.17**	.27**
Hyperactivity	-.34**	-.26**	.16**	.34**
ADHD Index	-.34**	-.25**	15**	.32**
Girls				
Oppositional behaviour	-.21**	-.15**	.10	.30**
Cognitive problems/inattention	-.25**	-.15**	.14**	.26**
Hyperactivity	-.16**	-.12*	.18**	.32**
ADHD Index	-.18**	-.13*	.20**	.36**

Note: Adaptive cognition (self belief, valuing, learning focus); adaptive behaviour (planning, task management, persistence); maladaptive cognition (anxiety, failure avoidance, uncertain control) and maladaptive behaviour (self-sabotage, disengagement). ** $p < .01$, * $p < .05$.

Table 3: Stepwise regression analysis predicting classroom behaviours with all dimensions of academic motivation entered as predictors (split by gender).

Classroom behaviour	Boys			Girls		
		R^2	Final β		R^2	Final β
Oppositional	Self sabotage	.13	.24**	Disengagement	.09	.26**
behaviour	Learning focus	.19	-.28**	Persistence	.11	-.15**
	Uncertain control	.20	.10*			
Cog problems/	Learning focus	.10	-.28**	Disengagement	.12	.25**
inattention	Uncertain control	.15	.17**	Self sabotage	.14	.16**
	Self sabotage	.17	.15**	Self belief	.16	-.12*
Hyperactivity	Self sabotage	.13	.24**	Disengagement	.11	.33**
	Learning focus	.20	-.29**	Task mgt	.13	-.11*
	Uncertain control	.21	.12*			
ADHD	Learning focus	.12	-.289**	Disengagement	.15	.278**
	Self sabotage	.19	.22**	Self sabotage	.21	.26**
	Uncertain control	.19	.11*			

Note: Method of entry: Stepwise Forward. ** $p < .01$, * $p < .05$